# Multicore rad hard processing in space, Phase I

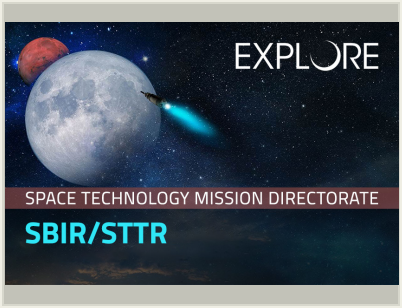
Completed Technology Project (2009 - 2009)

## Project Introduction

Space Micro proposes to research and develop a high performance computing/processing platform for NASA space missions. Leveraging our previous work for both NASA and DoD we will apply our patented techniques for space radiation mitigation and hardening which will allow very advanced COTS processors to survive in space environments. Use of high speed emerging multicore processors enables unprecedented throughput in space to support new missions and applications. At the end of Phase 1 we will have demonstrated, by analysis and limited lab testing, the technical feasibility. (TRL=2-3). In Phase 2 we will develop an engineering model of this processing card, and demonstrate in relevant ground-based radiation simulators (Proton, heavy ion)- TRL=5-6 at end of Phase 2, and ready to launch as a standard space product.

## Anticipated Benefits

Potential NASA Commercial Applications: This technology may benefit commercial space platforms, both LEO and GEO telecommunication satellites, such as Intelsat, Direct TV, XM radio, Lockheed's A2100, and Boeing's HS-601. Civil earth sensing applications such as weather/metrology applications e.g. (NOAA) can also benefit. This technology and products will also address emerging MDA radiation threats. These programs include MKV THAAD, AEGIS, and GMD for Blocks 2012 and beyond. With the new challenge of atmospheric neutrons to MDA High altitude airship (HAA) programs and NASA or Air Force UAV programs, this R&D will be a timely solution. Other military applications may include strategic missiles (Trident and AF upgrades), as well as many DoD tactical weapon programs with nuclear survival levels.

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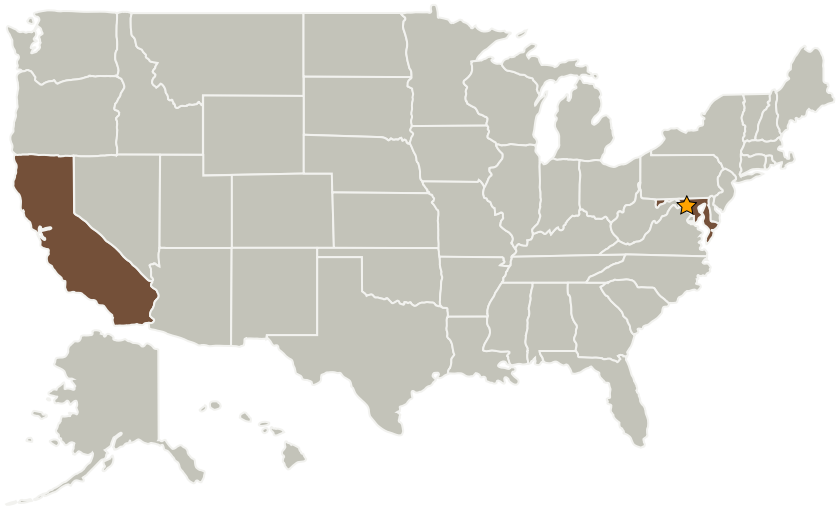
## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Goddard Space Flight Center(GSFC) | Lead Organization | NASA Center | Greenbelt, Maryland |
| Space Micro, Inc. | Supporting Organization | Industry | San Diego, California |

| Primary U.S. Work Locations | |
|---|---|
| California | Maryland |

## Project Transitions

**January 2009:** Project Start

**July 2009:** Closed out

**Closeout Summary:** Multicore rad hard processing in space, Phase I Project Image

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Goddard Space Flight Center (GSFC)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Project Manager:**

Kyle J Gregory

**Principal Investigators:**

David Strobel
Dave J Strobel

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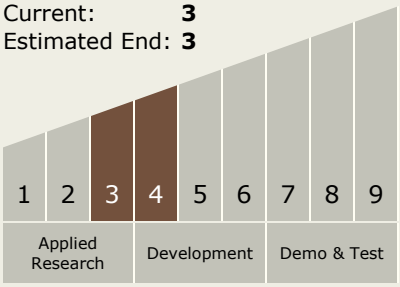
## Technology Maturity (TRL)

Start: **4**
Current: **3**
Estimated End: **3**




## Technology Areas

**Primary:**

- TX04 Robotic Systems
  - TX04.2 Mobility
    - TX04.2.3 Small-Body and Microgravity Mobility